

EXHIBIT 31

Using The Electronic Manual

Requirements

The following is a list of system requirements for the electronic manual:

- ✓ Pentium Processor
- ✓ 64 MB of RAM
- ✓ 50 MB of Available Hard Drive Space
- ✓ Windows® 98 SE, Millennium, NT, 2000, or X Operating System
- ✓ CD-ROM Drive
- ✓ 800 x 600 Screen Resolution
- ✓ AutoCAD® or Volo™ View 2000-129 (Volo™ View is provided on CD)
- ✓ Adobe® Acrobat® or Acrobat® Reader (Acrobat® Reader is provided on CD)

Opening the Manual

To open the electronic manual, insert the manual CD into your CD-ROM drive. The manual startup menu will appear. If this is the first time the manual has been used, a disclaimer will have to be acknowledged. If your CD-ROM drive is not configured to *Auto Run*, open Windows Explorer® and open ‘Startupmenu.exe’.

Navigation

Navigating the electronic manual can be done by clicking on a topic in the left pane. Several of the topics have sub-topics which can be accessed by clicking on the [+] symbol to the left of the parent topic. The table of contents also has links to specific areas of the manual. To search for a specific topic, use the find function by keying ‘CTRL+F’.

Viewing Documents

The electronic manual uses external documentation for schematics, custom equipment documentation, etc. To view these documents, click the link to the specified topic. If the topic is located on an external document, there will be a button to access these documents. When you click the button, Adobe® may display a confirmation message asking if you want to launch the application used to view the document. Select *All*, and a list of available documents on that topic will appear. Click the document you wish to view. To return from an external document, click on the back arrow for PDF documents. Close the AutoCAD® viewer to return from viewing a schematic. All schematics are in *.dwg format, and all other external documents are in *.pdf format. A compatible viewer for each type of document is required to run the electronic manual.

Troubleshooting

If you have a problem with the electronic manual, check the following:

- The electronic manual was started using the ‘Startupmenu.exe’ file.
- The electronic manual disclaimer has been acknowledged.
- There is an AutoCAD® compatible viewer installed.
- There is a Portable Document Format compatible viewer installed (PDF Viewer).
- The original directory structure has not changed.

If everything in the above list checks out and you are still having problems with the electronic manual, uninstall Adobe® Acrobat® (or Adobe® Reader), and AutoCAD® (or Volo™ View), then reinstall each.

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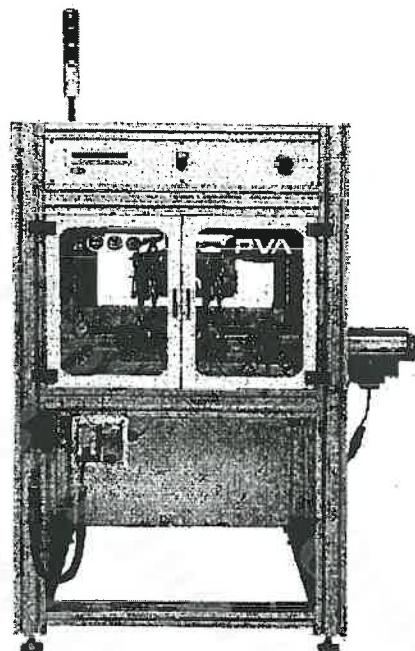
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Coating and Dispensing Installation and Service Manual

Models:

- PVA250
- PVA250E
- PVA350
- PVA550
- PVA650
- PVA750
- PVA2000
- PVA2000C
- PVA3000



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Operation and Maintenance Manual

Warnings, Cautions, and Notes

Certain warning symbols are affixed to the machine and correspond to notations in this manual. Before operating the workcell, identify these warning labels and read the notices described below. Not all labels may be used on any specific system.



Always wear-approved safety glasses when operating or working near the workcell.

6040



In situations where inattention could cause either personal injury or damage to equipment a warning notice is used.

6014



Do not smoke near the workcell. Always have a fire extinguisher available for emergency use.

6019



Before operating the system, read and understand the manuals provided with the unit.

6017



Before performing any repairs or maintenance to the system, turn off power and lock out the power disconnect switch.

6011



Never place hands or tools in areas designated by this symbol when the machine is in operation. A dangerous condition may exist.

6008



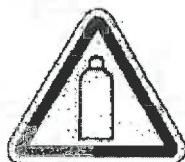
Warning notices are used to emphasize that hazardous voltages, current, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use. Only qualified personnel should enter areas designated with this symbol.

6010



Before performing any repairs or maintenance to the system, read and understand the manuals provided with the unit. A qualified individual should only perform Service.

6018



Exercise caution when pressurized vessels are present. Identify and repair any leaks immediately. Always wear appropriate safety equipment when working with pressurized vessels or vessels containing chemicals.

6054



Laser light source present. Do not stare directly into the beam. Do not use in the presence of highly reflective surfaces.

6003



Pinch hazard from moving parts. Avoid contact.

1012



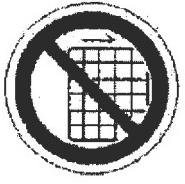
Shear hazard from moving parts. Avoid contact.

1099



Hot surface. Avoid contact.

6043



Do not remove protective guarding.

6060

Introduction

System Description

This manual is intended primarily as a reference for production and operator. However, technical personal that is not familiar with PVA equipment find this manual useful for introduction and training.

The workcell has been designed specifically for applications involving high precision industrial dispensing and spray conformal coating. The flexibility of the machine allows it to be used effectively for a wide range of applications.

The valves are mounted to the end effector of a two, three or four axis Cartesian robot. All dispensing / spraying is performed within the lexan enclosed work area. Limits have been imposed on the axes to prevent damage to the machine. The dispense / spray path and active heads are controlled by a program stored in the motion controller. The controller can store and retrieve up to 30 programs.



NOTE: Not all models are equipped with lexan guarding.

The operator interface (OIT) permits the operator complete control of the machine. This includes machine setup, manual operation, program selection and automatic operation. Machine status and error messages are displayed on the LCD screen and via the optional light tower. It is necessary that operator(s) have read or by training understand the operation of this machine.

Any uses other than listed above could result in a dangerous condition and cannot be protected against by the safety features installed on the system.

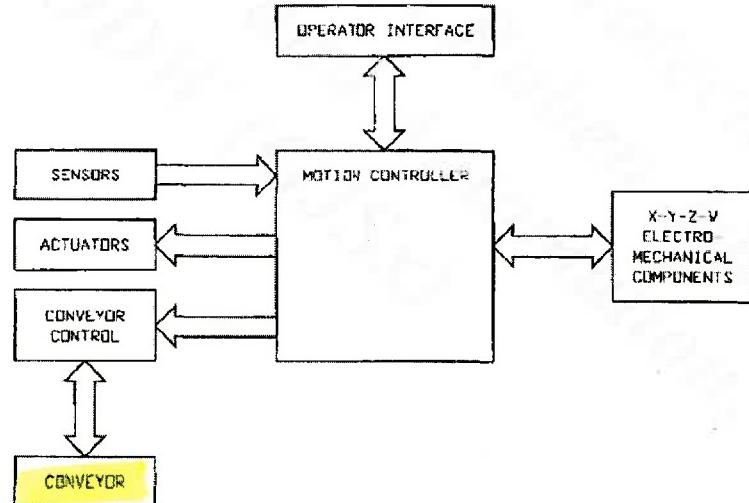


Figure 1 – Workcell Functional Block Diagram